



The Panama Canal Authority Canal Expansion Risk Assessment Report

Informe de la Evaluación de Riesgo de la Expansión del Canal de la Autoridad del Canal de Panamá

AON Enterprise Risk Management

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Resumen Ejecutivo

Executive Summary

The Panama Canal Authority (“ACP”) retained Aon to conduct an assessment of the risks associated with an expansion of the canal and to lay the foundation for an enterprise-wide risk management process that will allow the ACP to identify, quantify and prioritize material risks related to the expansion project. In our analysis, we have sought to evaluate future risks, and review the risks in light of the current environment. We also sought to identify areas of opportunity to enhance ACP’s ability to succeed in the canal expansion project.

Our review indicated that the ACP has identified numerous risks that could impair or delay the canal construction project, although the impression of the possible risk impact varies across the organization. For purposes of this analysis, materiality at the enterprise level was defined as a project delay of over 1.5 years and/or cost overruns of over \$200 million. Through the aggregation of the interviews and an internal and external data review, we identified twenty-two key risks.

Based on our analysis, ten risks were deemed to exceed the ACP’s risk tolerance and materiality threshold. From a risk prioritization standpoint, these risks were selected for further review and analysis. The table below identifies the critical risks and type of analysis conducted.

Risk Category	Risk	Analysis Method
Administrative & Operational	<ul style="list-style-type: none"> Inefficient organizational structure Channel disruption 	<ul style="list-style-type: none"> Benchmarking Quantitative model
Environmental, Political and Social	<ul style="list-style-type: none"> Environmental concerns/planning Poor communications strategy 	<ul style="list-style-type: none"> ACP effort underway ACP effort underway
Execution	<ul style="list-style-type: none"> Project completion delay Changes in cost projections/overruns Change in project scope, design or definition Recruitment and retention of quality and quantity of skilled labor Employee safety 	<ul style="list-style-type: none"> Quantitative model Quantitative model Quantitative model Quantitative model Benchmarking
Market	<ul style="list-style-type: none"> Inaccurate revenue projections 	<ul style="list-style-type: none"> ACP effort underway

The interviewees perceived that the largest risk to the expansion project is project completion delay. A material delay can arise from multiple causes, including problems related to contractors, equipment, labor, logistics, and weather. Many of these delay risks can be at least partially mitigated.

From Aon’s perspective, however, the most critical risk to the expansion project is the ACP’s organizational structure. The ACP’s current organizational structure, while functional for current operations, may prove dysfunctional and will likely create inefficiencies in the proposed expansion project. Reorganizing the ACP’s structure prior to project initiation can mitigate the potential financial impact of this risk on the expansion project.

While employee safety made the ACP’s critical risk list, based on construction project statistics and Panamanian financial obligations to injured or deceased employees, Aon’s view is that this is not a critical risk because it will not reach the materiality threshold.

Canal Expansion Risk Assessment Report

Of the ten critical risks identified, five risks were selected for detailed quantitative modeling. These risks included: project completion delay, recruitment and retention of quality and quantity of skilled labor, changes in cost projects/overruns, changes in project definition, scope or design, and channel disruption. Inefficient organizational structure is not a component of this model since it does not lend itself to quantification.

An integrated risk model was developed incorporating these five risks to quantify the potential and probable monetary and/or operational impact of risks associated with a prolonged project completion delay or significant cost overruns. The risks to the expansion project are not static and Aon has delivered a stochastic modeling tool that allows the ACP to easily change cost estimates, timelines and distribution parameters as time passes and better information becomes available.

Recommendations to mitigate risk are provided and incorporate the guiding principles of risk management: risk administration, risk assessment, risk control and risk finance. Specific recommendations are provided, as appropriate, for key risks.

We commend the ACP's commitment to adopting and implementing an enterprise risk management process and use it in a forward-looking context. Our conclusions and recommendations are offered in support of this process and are intended to enhance the ACP's ability to effectively plan for and effectively execute on its goals of canal expansion.